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EUROPEAN PATENT APPLICATION

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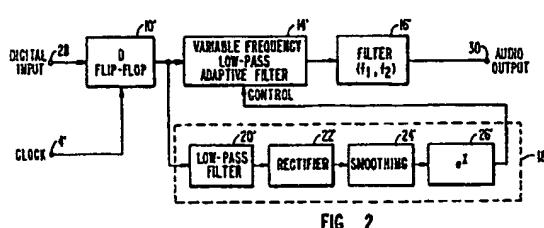
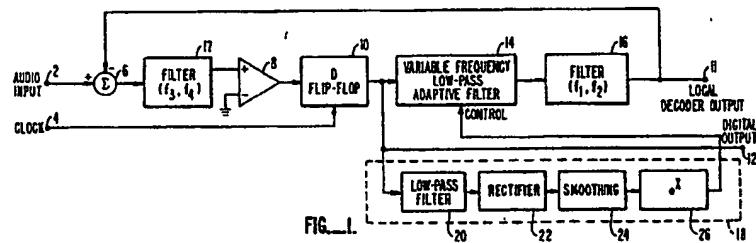
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⑯ Adaptive-filter single-bit digital encoder and decoder and adaptation control circuit responsive to bitstream loading.

⑯ An adaptive single-bit encoder and decoder has its adaptive function determined by dynamically dividing the message frequency band into delta-sigma and delta modulation regimes of operation. In a practical embodiment this is accomplished by varying the corner frequency of a variable-frequency low-pass filter (14, 14') in a leaky integrator so that below the corner frequency the operation is that of delta-sigma modulation and above the corner fre-

quency the operation is that of delta modulation. An adaptation control circuit (18, 18') removes the clock signal component from the encoded bit stream to provide an analog signal representative of bit stream information or loading for use in generating the control signal. The analog signal is peak rectified (22, 22'), smoothed (24, 24'), and (optionally) non-linearly processed (26, 26') to provide the control signal.





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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
A	<p>IEEE TRANSACTIONS ON COMMUNICATION TECHNOLOGY, vol. COM-16, no. 1, February 1968, pages 149-157, -New York, US; A. TOMOZAWA et al.: "Companded delta modulation for telephone transmission"</p> <p>* Page 151, left-hand column, paragraphs 3-5; figure 5 *</p> <p>--</p>	1,6, 16,21	H 03 M 3/02 H 03 G 9/02
A	<p>PROCEEDINGS OF THE IEE, vol. 117, no. 10, October 1970, pages 1915-1920, Stevenage, GB; A.A. CARTMALE et al.: "Calculating the performance of syllabically companded delta-sigma modulators"</p> <p>* Page 1916, left-hand column, last paragraph - right-hand column, 3rd paragraph; figure 2 *</p> <p>--</p>	1,6, 7,16, 21,22	TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
A	<p>PATENT ABSTRACTS OF JAPAN, vol. 5, no. 186 (E-84)(858), November 25, 1981; & JP-A-56 112 121 (NIPPON DENSHIN DENWA KOSHA), 04-09-1981</p> <p>* Abstract; figures *</p> <p>-----</p>	1-4, 16-19	H 03 M H 03 G H 03 H
RELEVANT DOCUMENTS			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	05-02-1990	BLAAS	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone	Y : particularly relevant if combined with another document of the same category		
A : technological background	O : non-written disclosure		
P : intermediate document			



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid.
namely claims:
- No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

X LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions.
namely:

1. Claims 1-27: Adaptive A-modulator in which the adaptive function is obtained by changing the corner frequency of the integrator.
2. Claims 28-32: Generation of control signals for adaptive delta-modulators in general.

- All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid.
namely claims:
- None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.
namely claims: 1-27